

**NMDCAT**  
**SUPER FINAL PAPER-4**

Total MCQs: 200

Max. Marks: 200

**BIOLOGY**

- Q.1** A protein that is present in prokaryotic cell while absent in eukaryotic cell is:  
a. Tubulin  
b. Histone  
c. Pilin  
d. Troponin
- Q.2** Phagocytosis is the character of most of:  
a. Plant cells  
b. Animal cells  
c. Bacterial cells  
d. Fungal cells
- Q.3** All of the following are found in plant, animal and fungal cells except:  
a. Cristae  
b. Cisternae  
c. Thylakoids  
d. Nucleoli
- Q.4** The proteins or enzymes which have to be transported out of the cell must pass through:  
a. Mitochondria  
b. Chloroplast  
c. Nucleus  
d. Golgi apparatus
- Q.5** Centrioles are made up of:  
a. Tubulin  
b. Actin  
c. Myosin  
d. Tropomyosin
- Q.6** Presence of ribosomes in mitochondria indicates that these are involved in:  
a. Energy production  
b. Protein synthesis  
c. Self replication  
d. Fatty acid metabolism
- Q.7** The covalent bond or bridge between two monosaccharides to form a disaccharide is called:  
a. Carboxyl bond  
b. Hydroxyl bond  
c. Hydrogen bond  
d. Glycosidic bond
- Q.8** It gives brick red colour with iodine:  
a. Glucose  
b. Starch  
c. Glycogen  
d. Cellulose
- Q.9** Antibodies are actually:  
a. Globular proteins  
b. Metalloproteins  
c. Fibrous proteins  
d. Glycolipids
- Q.10** Fibrous proteins have:  
a. One polypeptide chain  
b. Two polypeptide chains  
c. Multiple polypeptide chain  
d. One or more polypeptide chains
- Q.11** It is an important nucleotide used as energy currency by the cell:  
a. NADH  
b. ATP  
c. Glucose  
d. Creatin-PO<sub>4</sub>
- Q.12** Anticodon is found on:  
a. DNA  
b. mRNA  
c. rRNA  
d. tRNA
- Q.13** Which of the following is true for all enzymes?  
a. All enzymes need co-factor  
b. All enzymes are involved in catabolism  
c. All enzymes are specific in action  
d. All enzymes work in acidic medium
- Q.14** All of the following enzymes work in acidic medium except:  
a. Pepsin  
b. Sucrase  
c. Enterokinase  
d. Catalase
- Q.15** These block active site of enzyme temporarily:  
a. Competitive reversible  
b. Competitive irreversible  
c. Non-competitive reversible  
d. Non-competitive irreversible
- Q.16** A biochemical process which occurs within a cell to breakdown complex compounds to produce energy is called:  
a. Respiration  
b. Photosynthesis  
c. Oxidation reduction  
d. Photophosphorylation

- Q.17 Instrument which is used to measure relative abilities of different pigments to absorb different wavelengths of light is called:  
 a. Spectrometer  
 c. Barometer  
 b. Photometer  
 d. Spectrophotometer
- Q.18 These are yellow to orange photosynthetic pigments:  
 a. Chlorophyll 'a'  
 c. Carotenes  
 b. Chlorophyll 'b'  
 d. Xanthophylls
- Q.19 When equal intensities of light are given, there is more photosynthesis in:  
 a. Violet  
 c. Red  
 b. Blue  
 d. Orange
- Q.20 How many water molecules are used during one Krebs cycle?  
 a. 1  
 c. 3  
 b. 2  
 d. 4
- Q.21 During oxidative phosphorylation, pumping of protons is across:  
 a. Thylakoid membrane  
 c. Inner membrane of chloroplast  
 b. Inner membrane of mitochondria  
 d. Outer membrane of mitochondria
- Q.22 The tobacco mosaic virus was crystallized for the first time by:  
 a. W.M. Stanley  
 c. E. Jenner  
 b. L. Pasteur  
 d. Ivanowski
- Q.23 Core of HIV is made of:  
 a. RNA only  
 c. RNA and proteins  
 b. Proteins only  
 d. RNA, proteins and envelop
- Q.24 Which one is true about protein coat of HIV during its infectious cycle?  
 a. Remains outside the host cell  
 c. Enters and uncoated in cytoplasm  
 b. Enters cell but remains intact  
 d. Enters and uncoated in nucleus
- Q.25 Which of the following is true for all viruses?  
 a. They invariably contain DNA  
 c. They occur only inside bacteria  
 b. They multiply only in host cell  
 d. Their genetic material is RNA
- Q.26 These are the structures which help in bacterial motility:  
 a. Flagella  
 c. Pili  
 b. Cilia  
 d. Pseudopods
- Q.27 It is the major component in cell wall of Gram positive bacteria:  
 a. Lipoprotein  
 c. Lipoteichoic acid  
 b. Lipopolysaccharide  
 d. Peptidoglycan
- Q.28 The cell wall of fungus is made up of chitin. It is a:  
 a. Glycoprotein  
 c. Carbohydrate  
 b. Glycolipid  
 d. Fibrous protein
- Q.29 In fungi, during mitosis:  
 a. Nuclear membrane remains intact  
 c. It occurs in the nucleus  
 b. Spindles form within the nucleus  
 d. All a, b, c
- Q.30 In plants, meiosis occurs during:  
 a. Spore formation  
 c. Fertilization  
 b. Gamete formation  
 d. Spore germination
- Q.31 Vascular plants are called tracheophytes because of the presence of:  
 a. Tracheids  
 c. Xylem  
 b. Vascular bundles  
 d. Seeds
- Q.32 True coelom first time appeared in:  
 a. Platyhelminthes  
 c. Arthropods  
 b. Aschelminthes  
 d. Annelids
- Q.33 All are present in phloem tissue except:  
 a. Sclereids  
 c. Companion cells  
 b. Parenchyma cells  
 d. Vessels
- Q.34 Megakaryocytes are involved in formation of:  
 a. Erythrocytes  
 c. Monocytes  
 b. Lymphocytes  
 d. Thrombocytes



- Q.35 Brachiocephalic artery arises from:  
 a. Base of aorta  
 c. Thoracic aorta  
 b. Arch of aorta  
 d. Abdominal aorta
- Q.36 Oxygenated blood through pulmonary veins enters in heart during:  
 a. Right atrial systole  
 c. Left atrial systole  
 b. Right atrial diastole  
 d. Left atrial diastole
- Q.37 Which of the following is correct about pathway of flow of lymph?  
 a. Afferent → Efferent → Node  
 c. Afferent → Node → Efferent  
 b. Efferent → Afferent → Node  
 d. Efferent → Node → Afferent
- Q.38 In humans, the transportation of various substances is accomplished by:  
 a. Lymphatic and excretory systems  
 c. Cardiovascular and digestive systems  
 b. Lymphatic and cardiovascular systems  
 d. Nervous and muscular system
- Q.39 The most powerful contraction is generated by:  
 a. Left atrium  
 c. Right atrium  
 b. Left ventricle  
 d. Right ventricle
- Q.40 A structure that is common among all blood vessels:  
 a. Connective tissue  
 c. Elastic tissue  
 b. Endothelium  
 d. Smooth muscles
- Q.41 These are the part of innate immunity:  
 a. 1<sup>st</sup> and 2<sup>nd</sup> defense lines  
 c. 3<sup>rd</sup> and 1<sup>st</sup> defense lines  
 b. 2<sup>nd</sup> and 3<sup>rd</sup> defense lines  
 d. 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> defense lines
- Q.42 Plasma cells are important for immunity because they:  
 a. Phagocytose antigen  
 c. Produce cell mediated response  
 b. Secrete antibodies  
 d. Form 1<sup>st</sup> defense line of body
- Q.43 Renal pyramids are found in:  
 a. Renal capsule  
 c. Renal medulla  
 b. Renal cortex  
 d. Renal pelvis
- Q.44 It is the site for counter current multiplier at nephron:  
 a. Renal corpuscle  
 c. Loop of Henle  
 b. PCT and DCT  
 d. Collecting duct
- Q.45 Human urinary system is specialized for all except:  
 a. Homeostasis  
 c. Osmoregulation  
 b. Excretion  
 d. Thermoregulation
- Q.46 Which of these substances is not reabsorbed selectively by kidneys?  
 a. Creatinine  
 c. Amino acids  
 b. Glucose  
 d. Salts
- Q.47 The number of nephrons in a kidney is equal to the:  
 a. Number of Bowman's capsules  
 b. Sum of Bowman's capsules and glomerulus  
 c. Double the number of Bowman's capsules  
 d. Sum of Bowman's capsules, PCT's and DCT's
- Q.48 Detection of change and signaling for effector's response to the control system is:  
 a. Negative feedback  
 c. Inter-coordination  
 b. Positive feedback  
 d. Feedback mechanism
- Q.49 Most abundant type of muscles in human body are:  
 a. Cardiac muscles  
 c. Longitudinal smooth muscles  
 b. Circular smooth muscles  
 d. Skeletal muscles
- Q.50 Myosin tail consists of \_\_\_\_\_ polypeptide chains coiled together.  
 a. 1  
 c. 3  
 b. 2  
 d. 4
- Q.51 During muscle contraction, calcium ions are transferred from SR to cytosol through:  
 a. Na-gates  
 c. Na-K pump  
 b. Ca-gates  
 d. Ca-pump
- Q.52 Peripheral nervous system contains all of the following cells except:  
 a. Sensory neurons  
 c. Associative neurons  
 b. Motor neurons  
 d. Schwann cells

- Q.53 In unstimulated state, a neuron has a membrane potential of approximately:  
 a.  $-70\text{mV}$   
 b.  $-40\text{mV}$   
 c.  $+70\text{mV}$   
 d.  $+50\text{mV}$
- Q.54 Chemically thyroxine is derived from:  
 a. Cholesterol  
 b. Tyrosine  
 c. Glucose  
 d. Nucleoside
- Q.55 Which of the following have common releasing factor from hypothalamus?  
 a. ADH and Oxytocin  
 b. STH and ACTH  
 c. FSH and LH  
 d. LH and LTH
- Q.56 While responding to stimulus, motor neurons give signals to:  
 a. Receptors  
 b. Afferent neurons  
 c. Effectors  
 d. Relay neurons
- Q.57 If level of thyroxine is low in blood then what will be effect on TRF and TSH through negative feedback?  
 a. TRF  $\uparrow$ , TSH  $\uparrow$   
 b. TRF  $\uparrow$ , TSH  $\downarrow$   
 c. TRF  $\downarrow$ , TSH  $\uparrow$   
 d. TRF  $\downarrow$ , TSH  $\downarrow$
- Q.58 It is the major coordinating centre for menstrual cycle:  
 a. Hypothalamus  
 b. Anterior pituitary  
 c. Ovary  
 d. Uterus
- Q.59 Progesterone is secreted from:  
 a. Hypothalamus and anterior pituitary  
 b. Anterior and posterior pituitary  
 c. Anterior pituitary and ovary  
 d. Corpus luteum and placenta
- Q.60 The menstrual flow in menstrual cycle normally lasts for about:  
 a. 7 to 10 days  
 b. 11 to 14 days  
 c. 3 to 7 days  
 d. More than 14 days
- Q.61 The monohybrid genotypic ratio 1 : 2 : 1 in  $F_2$  generation indicates:  
 a. Dominance  
 b. Incomplete dominance  
 c. Segregation  
 d. Independent assortment
- Q.62 The law of segregation of characters is also called the law of purity of gametes because:  
 a. Gametes have only one of the two alleles for each character  
 b. Gametes cannot be contaminated  
 c. Gametes are very different type of cells  
 d. It was just another name adopted accidentally
- Q.63 How would you test a pea plant whether it is a pure or hybrid for tallness?  
 a. Cross it with a pure tall pea plant  
 b. Cross it with a homozygous dwarf pea plant  
 c. Cross it with another tall pea plant of unknown genotype  
 d. Cross it with any pea plant
- Q.64 A child of O-group has B-group father. The genotype of father will be:  
 a.  $I^O I^O$   
 b.  $I^B I^B$   
 c.  $I^A I^B$   
 d.  $I^B I^O$
- Q.65 Which of the following do not follow Mendel's law of independent assortment?  
 a. Alleles  
 b. Linked genes  
 c. Multiple alleles  
 d. Non-linked genes
- Q.66 It correctly represents the pattern of inheritance of Y-linked traits:  
 a. From affected father to son only  
 b. From affected father to carrier daughter  
 c. From father to his all children  
 d. From father to his all daughters
- Q.67 In ABO blood groups, \_\_\_\_\_ is always heterozygous:  
 a. A  
 b. B  
 c. AB  
 d. O
- Q.68 Human cells contain about \_\_\_\_\_ different types of tRNA:  
 a. 20  
 b. 45  
 c. 61  
 d. 64
- Q.69 Translocation of ribosome on mRNA from  $5' \rightarrow 3'$  is guided by:  
 a. Initiation factor  
 b. Elongation factor  
 c. Activating enzyme  
 d. Ribosomal enzyme



- Q.70 In case of prokaryotic cells, the first amino acid incorporated during translation is:  
 a. Methionine  
 c. Formyl methionine  
 b. Serine  
 d. Glutamic acid
- Q.71 In eukaryotic cell transcription, RNA splicing and RNA capping takes place inside the:  
 a. Ribosomes  
 c. Nucleus  
 b. Dictyosomes  
 d. Endoplasmic Reticulum
- Q.72 Bubble like appearance at origin of replication is achieved by:  
 a. DNA gyrase  
 c. Topoisomerase  
 b. DNA helicase  
 d. DNA polymerase
- Q.73 It is a type of point mutation which occurs due to replacement of one or few nucleotide in a particular segment of DNA:  
 a. Deletion  
 c. Translocation  
 b. Base substitution  
 d. Insertion
- Q.74 Darwin suggested that populations of individual species become better adapted to their local environments through:  
 a. Special creation  
 c. Modern synthesis  
 b. Natural selection  
 d. Reproductive isolation
- Q.75 These are historical remnants of structures that had important functions in ancestors but are no longer essential presently:  
 a. Homologous structures  
 c. Vestigial structures  
 b. Analogous structures  
 d. Embryological structures
- Q.76 Plasmids were first time discovered in:  
 a. T phages  
 c. *Escherichia coli*  
 b. Lambda phages  
 d. *Hemophilus influenzae*
- Q.77 An action that is associated with Taq polymerase in PCR:  
 a. Addition of primer  
 c. Extension of primer  
 b. Replacement of primer  
 d. Denaturation of DNA
- Q.78 Quinine is produced from cell suspension culture of:  
 a. *Cinchona ledgeriana*  
 c. *Arabidopsis*  
 b. *Digitalis lanata*  
 d. Mouse eared cress
- Q.79 Chemical nature of primer used in PCR process is \_\_\_\_\_.  
 a. Protein  
 c. RNA  
 b. Carbohydrate  
 d. DNA
- Q.80 What is the function of molecular vector in genetic engineering?  
 a. Separate fragments of DNA  
 c. Link together fragments of DNA  
 b. Carry DNA into host cell  
 d. Make millions of copies DNA

## CHEMISTRY

- Q.81 The regular coiling or zigzagging of polypeptide chains results in the \_\_\_\_\_ structure of protein  
 a. Primary  
 c. Quaternary  
 b. Secondary  
 d. Tertiary
- Q.82 The substance that retard the activity of the enzyme  
 a. Co-Enzyme  
 c. Activator  
 b. Apo-Enzyme  
 d. Inhibitor
- Q.83 Enzyme can increase the rate of reaction upto  
 a.  $10^{10}$  times  
 c. 10 times  
 b.  $10^{20}$  times  
 d.  $10^2$  times
- Q.84 Most acidic compound is  
 a. Formic Acid  
 c. Carboic Acid  
 b. Ethanoic Acid  
 d. Butyric Acid
- Q.85 Which reagent is used to reduced a carboxylic group to an alcohol  
 a.  $H_2 / Ni$   
 c.  $LiAlH_4$   
 b.  $HI / P$   
 d.  $NaBH_4$

- Q.86 An organic compound has the following properties.  
 (I) It gives a yellow ppt with 2, 4-DNPH reagent.  
 (II) It gives a positive tri-iodomethane test  
 (III) It does not react with Tollen's reagent, so the organic compound is  
 a.  $\text{CH}_3\text{CHO}$  b.  $\text{CH}_3\text{CH}_2\text{COCH}_3$   
 c.  $\text{CH}_3\text{CH}_2\text{OH}$  d.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHO}$
- Q.87 A food chemist wants to create the odour of pineapple for a product. An ester with this odour has the formula  $\text{C}_5\text{H}_{11}\text{COOC}_2\text{H}_5$ . Which pair of reagents would produce this ester?  
 a.  $\text{CH}_3\text{COOH}$  and  $\text{C}_5\text{H}_{11}\text{COOH}$  b.  $\text{C}_2\text{H}_5\text{OH}$  and  $\text{C}_5\text{H}_{11}\text{COOH}$   
 c.  $\text{C}_2\text{H}_5\text{OH}$  and  $\text{C}_2\text{H}_5\text{CONH}_2$  d.  $\text{C}_3\text{H}_7\text{OH}$  and  $\text{C}_2\text{H}_5\text{COOH}$
- Q.88 A common industrial solvent is a mixture of propanone ( $\text{CH}_3\text{COCH}_3$ ), and Ethanoic Acid ( $\text{CH}_3\text{CO}_2\text{H}$ ). Which reagent would have no effect on the solvent.  
 a.  $\text{Na}_{(s)}$  b.  $\text{NaOH}_{(aq)}$   
 c.  $\text{NaBH}_4$  d.  $\text{Br}_2/\text{Aq}$
- Q.89 Upon oxidation of 3-hexanone, we get  
 a. Hexanoic Acid b. 2-Hexanol  
 c. Acetic Acid + Butanoic Acid d. 2 moles of Propanoic acid
- Q.90 The mass of 2 molecule of hydrogen gas is  
 a. 2.0 gb. 4.0 g  
 c. 2.0 amu d. 4.0 amu
- Q.91 8 g of hydrogen gas reacts with 16g of oxygen gas. The mass of water formed is  
 a. 24g b. 18g  
 c. 9g d. 4.5g
- Q.92 Maximum number of electrons are present in  
 a. Oxide ion ( $\text{O}^{2-}$ ) b. Nitride ion ( $\text{N}^{3-}$ )  
 c. Potassium ion ( $\text{K}^{+1}$ ) d. Ne atom (Ne)
- Q.93 An ideal gas cannot be liquefied because  
 a. Size of molecules are very small b. No force of attraction  
 c. Polar nature d. All of these
- Q.94 Which of the following gases having maximum kinetic energy at room temperature?  
 a. Helium b. Hydrogen  
 c. Nitrogen d. All have same K.E.
- Q.95 Fused sodium chloride conducts electricity due to  
 a. Free ions b. It is insulator  
 c. Free electrons d. Both a and c
- Q.96 A water soluble "X" solid that melts at 460 K and it is poor conductor of heat and electricity. So, "X" is  
 a. Sucrose b. Wood  
 c. Copper d. Silica
- Q.97 Which of the following shows highest vapour pressure  
 a. Iodine b. Chlorine  
 c. Bromine d. Flourine
- Q.98 In which system hydrogen bonding is not present  
 a. Ethanol in water b. Helix in protein molecule  
 c. Structure of ice d. Liquefied chloromethane
- Q.99 Select the element in which the last electron present in outer most shell has,  $l = 0$   
 a. Cl b. Ar  
 c. P d. K
- Q.100 Maximum value of  $e/m$  is given by  
 a. Alpha Particles b. Hydrogen ion  
 c. Beta Particles d. Gamma Radiation
- Q.101 Mass of proton is  
 a.  $1.6726 \times 10^{-27} \text{g}$  b.  $1.6726 \times 10^{-24} \text{kg}$   
 c.  $1.6726 \times 10^{-24} \text{g}$  d.  $1.6726 \times 10^{27} \text{kg}$



- Q.102 Following molecule is non linear  
 a. Beryllium fluoride  
 c. Carbon disulphide
- Q.103 The shape of hydronium ion is  
 a. Trigonal planar  
 c. Trigonal pyramidal
- Q.104 The number of lone pairs in carbon tetrachloride molecule are  
 a. 12  
 c. 0
- Q.105 The standard enthalpy change in the formation of 1 mole of a compound from its element in their standard physical state is  
 a. Enthalpy of formation  
 c. Enthalpy of neutralization
- Q.106 The heat of formation of  $\text{SO}_2(\text{g})$  is  $-70.9 \text{ Kcal mol}^{-1}$ . The energy required for the decomposition of 1 mole of  $\text{SO}_2(\text{g})$  is  
 a. 35.50 Kcal  
 c. -70.9 Kcal
- Q.107 The lattice enthalpy of sodium fluoride is much greater than that of cesium fluoride. Which statement explains this difference.  
 a. Sodium is more electronegative than cesium  
 b. Sodium has higher melting point than cesium  
 c. The atomic radius of cesium is smaller than that of sodium  
 d. The ionic radius of sodium is smaller than that of cesium
- Q.108 When fused  $\text{PbBr}_2$  is electrolyzed  
 a. Bromine deposited at the cathode  
 c. Lead appears at the anode
- Q.109 Coupling of Pb with its  $\text{Pb}^{+2} / \text{Pb} = -0.13 \text{ V}$  and Ag with  $\text{Ag}^+ / \text{Ag} = +0.80 \text{ V}$  the cell reaction is  
 a.  $2\text{Ag}^+ + \text{Pb}^{+2} \rightarrow 2\text{Ag} + \text{Pb}$   
 c.  $\text{Ag}^+ + \text{Pb} \rightarrow \text{Ag} + \text{Pb}^{+2}$
- Q.110 The oxidation number of H is -1 in the compound  
 a.  $\text{H}_2\text{O}$   
 c.  $\text{NaOH}$
- Q.111 The value of  $K_p$  and  $K_c$  are equal when  
 a. Reaction occurs at STP  
 b. Reaction is exothermic  
 c. Reaction is endothermic  
 d. Number of moles of products and reactants are equal
- Q.112  $K_a$  value (the ionization constant) of HF acid is  $6.7 \times 10^{-5}$  the acid is a  
 a. Weak acid  
 c. Strong acid
- Q.113 The solubility of  $\text{NaClO}_3$  salt in water is decreased by adding  
 a.  $\text{KClO}$   
 c.  $\text{KClO}_4$
- Q.114 Which one of the following is not a buffer solution?  
 a.  $\text{H}_2\text{CO}_3 + \text{NaHCO}_3$  solution  
 c.  $\text{HI} + \text{NaI}$  solution
- Q.115 A catalyst is added to a system to change  
 a. The direction of the reaction  
 c. The concentration of the reaction
- Q.116 If half-life period of a reaction is independent of the concentration of the reactant then the reaction is  
 a. Zero order  
 c. Second order
- b. Sulphur dioxide  
 d. Hydrogen cyanide
- b. Angular  
 d. Tetrahedral
- b. 3  
 d. 4
- b. Enthalpy of atomization  
 d. Enthalpy of combustion
- b. 70.9 Kcal  
 d. -35.9 Kcal
- b. Lead is deposited at the cathode  
 d. No reaction
- b.  $2\text{Ag}^+ + \text{Pb} \rightarrow \text{Pb}^{+2} + 2\text{Ag}$   
 d.  $\text{Ag}^+ + \text{Pb}^{+2} \rightarrow \text{Ag} + \text{Pb}$
- b.  $\text{H}_3\text{BO}_3$   
 d.  $\text{NaH}$
- b. Reaction is exothermic  
 d. Number of moles of products and reactants are equal
- b. Moderately strong acid  
 d. All of these
- b.  $\text{NaCl}$   
 d.  $\text{KCl}$
- b.  $\text{CH}_3\text{COOH} + \text{CH}_3\text{COONa}$  solution  
 d.  $\text{NH}_4\text{OH} + \text{NH}_4\text{Cl}$  solution
- b. The rate of the reaction  
 d. The order of the reaction
- b. First order  
 d. Order is in fraction

- Q.117 The factors which affects the rate of reaction  
 a. Nature of reactants  
 c. Light  
 b. Surface area  
 d. All of the above
- Q.118 The experimental relationship between rate of reaction and the concentration of reactants is known as  
 a. Order  
 c. Rate constant  
 b. Rate of reaction  
 d. Rate law
- Q.119 Along the period, all of the following increases except  
 a. Atomic radius  
 c. Electronegativity  
 b. Ionization Energy  
 d. Nuclear charge
- Q.120 Which of the following elements of group IA form pale yellow per oxide  
 a. Sodium  
 c. Lithium  
 b. Barium  
 d. Potassium
- Q.121 A beaker contain XOH solution, point out the nature of solution if electronegativity of the X is equal to 1.1.  
 a. Acidic  
 c. Neutral  
 b. Basic  
 d. Unpredictable
- Q.122 Total s-block elements are  
 a. 2  
 c. 14  
 b. 7  
 d. 28
- Q.123 The number of unpaired electrons present in valence shell of Cr is  
 a. 6  
 c. 3  
 b. 5  
 d. 1
- Q.124 The geometry of  $[\text{Co}(\text{NH}_3)_4]^{+2}$  is  
 a. Octahedral  
 c. Trigonal  
 b. Square planar  
 d. Pentagonal
- Q.125 The least paramagnetic behavior is shown by  
 a.  $\text{V}^{+3}$   
 c.  $\text{Cu}^{+2}$   
 b.  $\text{Cr}^{+3}$   
 d.  $\text{Mn}^{+2}$
- Q.126 Elimination bimolecular reactions involve  
 a. 1<sup>st</sup> order kinetics  
 c. Zero order kinetics  
 b. 3<sup>rd</sup> order kinetics  
 d. 2<sup>nd</sup> order kinetics
- Q.127 Which halide is hydrolyzed easily  
 a.  $\text{CH}_3\text{CH}_2\text{F}$   
 c.  $\text{CH}_3\text{CH}_2\text{Br}$   
 b.  $\text{CH}_3\text{CH}_2\text{Cl}$   
 d.  $\text{CH}_3\text{CH}_2\text{I}$
- Q.128 The formula of secondary alcohol is  
 a.  $\text{R-OH}$   
 c.  $\text{R}_2\text{CHOH}$   
 b.  $\text{R-CH}_2\text{OH}$   
 d.  $\text{R}_3\text{COH}$
- Q.129 Which compound does not show hydrogen bonding with water?  
 a.  $\text{CH}_3\text{OH}$   
 c.  $\text{CH}_3\text{CH}_2\text{Cl}$   
 b.  $\text{C}_2\text{H}_5\text{OH}$   
 d.  $\text{C}_6\text{H}_5\text{OH}$
- Q.130 Which of the following compound is solid at room temperature?  
 a. Ethanol  
 c. Methanol  
 b. Butane  
 d. Phenol
- Q.131 Which of the following compounds will not release hydrogen when sodium metal is added  
 a.  $\text{CH}_3\text{COOH}$   
 c.  $\text{CH}_3\text{CH}_2\text{OH}$   
 b.  $\text{HCHO}$   
 d.  $\text{C}_2\text{H}_2$
- Q.132 When hydrogen gas is passed through phenol at  $150^\circ\text{C}$  with Ni as a catalyst, it forms  
 a. Benzene  
 c. Alcohol  
 b. Benzoic Acid  
 d. Cyclo hexane
- Q.133 Which one of the following is a heterocyclic compound  
 a. Cyclohexanol  
 c. Pyridine  
 b. Phenol  
 d. Anthracene
- Q.134 Butylene and iso butylene are an example of  
 a. Chain isomerism  
 c. Metamerism  
 b. Positional isomerism  
 d. Functional group isomerism



- Q.135 In Neo-pentyl alcohol the alpha carbon is directly bonded to  
 a. Two hydrogen atoms  
 b. Three hydrogen atoms  
 c. One hydrogen atom  
 d. No hydrogen atom
- Q.136 When benzene react with acetyl chloride in the presence of  $AlCl_3$ , the acetophenone is formed as a major product. What will be the electrophile in this reaction  
 a.  $CH_3\dot{C}O$   
 b.  $\dot{C}H_3$   
 c.  $CH_3\dot{C}H_2$   
 d.  $Cl^-$
- Q.137 When methane reacts with  $Cl_2$  in the presence of diffused light the products obtained are  
 a. Chloroform only  
 b. Carbon tetrachloride only  
 c. Chloromethane and dichloromethane  
 d. Mixture a,b,c
- Q.138 Toluene  $\xrightarrow[100^\circ C]{HNO_3, H_2SO_4}$   $X + 3H_2O$ , X in the given reaction is  
 a. 2,4,6-Trinitrophenol  
 b. 2,4,6-Trinitrotoluene  
 c. 2,4-Dinitrotoluene  
 d. 2,6-Dinitrotoluene
- Q.139 The carbon - carbon bond length in benzene is  
 a. 1.54 Å  
 b. 1.34 Å  
 c. 1.20 Å  
 d. 1.39 Å
- Q.140 One mole of a hydrocarbon "X" reacts completely with two moles hydrogen gas in the presence of a catalyst, so the "X" is  
 a. Benzene  
 b. Propane  
 c. Butene  
 d. Propyne

## PHYSICS

- Q.141 A ball is thrown with an initial velocity of  $20 \text{ ms}^{-1}$  at an angle of  $30^\circ$  to the horizontal. Calculate the horizontal distance travelled by the ball.



- a. 20 m  
 b. 34 m  
 c. 10 m  
 d. 40 m
- Q.142 Arshad is driving down 7<sup>th</sup> street. He drives 150 meter in 18 seconds. Assume he does not speed up or slow down. What is his speed?  
 a. 0.38 m/s  
 b. 8.33 m/s  
 c. 126 m/s  
 d. 58.33 m/s
- Q.143 A train takes 1 hour to go from one station to the other. It travels at a speed of  $30 \text{ kmh}^{-1}$  for first half hour and at a speed of  $50 \text{ kmh}^{-1}$  for the next half hour. The average speed of the train is:  
 a.  $45 \text{ kmh}^{-1}$   
 b.  $35 \text{ kmh}^{-1}$   
 c.  $40 \text{ kmh}^{-1}$   
 d.  $30 \text{ kmh}^{-1}$
- Q.144 If the slope of velocity-time graph gradually decreases, then the body is said to be moving with:  
 a. Positive acceleration  
 b. Negative acceleration  
 c. Uniform velocity  
 d. Zero acceleration
- Q.145 When force and displacement are in opposite direction then work done would be  
 a. Positive  
 b. Zero  
 c. Negative  
 d. Imaginary
- Q.146 A force of 6N act horizontally on a stationary mass of 2kg for 4s. The kinetic energy in joule is  
 a. 12  
 b. 72  
 c. 144  
 d. 48
- Q.147 A tennis ball at a given instant just before its struck by a tennis racket, its horizontal momentum is 4Ns and K.E is 40J, the mass of the tennis ball is  
 a. 0.8 kg  
 b. 0.5 kg  
 c. 0.11 kg  
 d. 0.2 kg

- Q.148** You push a heavy crate down a ramp at a constant velocity. Only four forces act on the crate. Which force does the greatest magnitude of work on the crate?
- The force of friction
  - The force of gravity
  - The normal force
  - The force you pushing
- Q.149** A body moves in a circle with increasing angular velocity. At time  $t = 6\text{sec}$ , the angular velocity is  $27\text{rad/s}$ . What is the radius of circle made by the body where linear velocity is  $81\text{cm/s}$ ?
- 6cm
  - 9cm
  - 3cm
  - 7cm
- Q.150** A body moving in a circular path with constant speed has
- Constant acceleration
  - Constant retardation
  - Variable acceleration
  - Variable speed and constant velocity
- Q.151** If the position vector of a particle is  $\vec{r} = (3\hat{i} + 4\hat{j})$  meter and its angular velocity is  $\vec{\omega} = (\hat{j} + 2\hat{k})$  rad/sec then its linear velocity is (in m/s).
- $-(8\hat{i} - 6\hat{j} + 3\hat{k})$
  - $(3\hat{i} - 6\hat{j} + 8\hat{k})$
  - $-(3\hat{i} - 6\hat{j} + 6\hat{k})$
  - $(6\hat{i} - 8\hat{j} + 3\hat{k})$
- Q.152** The mud flies off the tyre of a fast-moving car in the direction
- Parallel to the moving tyre
  - Anti-parallel to the moving tyre
  - Tangent to the moving tyre
  - None of these
- Q.153** The restoring force of SHM is maximum when particle:
- Displacement is maximum
  - Half way between mean and extreme
  - Crossing mean position
  - At rest
- Q.154** If an observer A moves towards the source with a velocity  $u_0$  the relative velocity increases to  $v + u_0$ . The number of waves per second received is
- $f = \frac{v + u_0}{\lambda}$
  - $f = \frac{v - u_0}{\lambda}$
  - $f = \frac{v}{\lambda}$
  - $f = \frac{\lambda}{v - u_0}$
- Q.155** A sounding source and a listener are both at rest relative to each other. If wind blows from the listener towards the source, then which one of the following of sound will change?
- Frequency
  - Speed
  - Phase
  - Wavelength
- Q.156** When a stationary wave is formed then its frequency is
- Same as that of the individual waves
  - Twice that of the individual waves
  - Half that of the individual waves
  - $\sqrt{2}$  that of the individual waves
- Q.157** In a certain process, 400J of heat energy is supplied to a system and at the same time 150J of work is done by the system. The increase in internal energy of system is \_\_\_\_\_.
- 150J
  - 300J
  - 250J
  - 500J
- Q.158** Work done by air when it expands from 50 litres to 150 litres at a constant pressure of 2 atmosphere is
- $2 \times 10^4$  joules
  - $2 \times 100$  joules
  - $2 \times 10^3 \times 100$  joules
  - $2 \times 10^{-3} \times 100$  joules
- Q.159** Dielectric atom placed between the plates of charged capacitor then due to electric polarization, dielectric atom?
- Remain neutral
  - Become negative
  - Become positive
  - Become ion
- Q.160** If a dielectric of relative permittivity  $\epsilon_r$  between the plates of a charged capacitor is placed its capacitance
- Decreases
  - Increases
  - Remains same
  - Sometime increases then decreases.

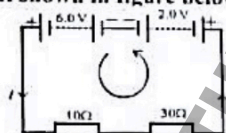


- Q.161 If dimensions of plates of capacitor is changed such that its surface area become double and thickness of plate reduced to half, then capacitance of capacitor:
- Increases
  - Decreases
  - Remains unchanged
  - may increase or decrease

- Q.162 If  $F$  is the force between two point charges submerged in a medium of dielectric constant  $K$ , then on withdrawing the medium, the force between the charges becomes
- $F\sqrt{K}$
  - $\frac{F}{\sqrt{K}}$
  - $FK$
  - $\frac{F}{K}$

- Q.163 When potential difference is applied across the ends of uniform wire of length  $l$  and radius  $r$ , a current  $I$  flow in the wire. If same potential difference is applied to the ends of another wire of the same material but of length  $2l$  and radius  $2r$ , the current in the wire is
- $I/4$
  - $I$
  - $2I$
  - $I/2$

- Q.164 Find the current in the circuit shown in figure below.



- 2A
  - 0.1 A
  - 0.2 A
  - 3A
- Q.165 If length of the conductor is doubled and its cross-section is halved, its conductance will
- Become one half
  - Become eight-fold
  - Increase four-fold
  - Decrease four-fold

- Q.166 The temperature coefficient of semi-conductor is negative because:

- Resistance increases will increase of temperature
- Resistance decreases will increase of temperature
- Resistance decreases will decrease of temperature
- Resistance remains same will increase of temperature

- Q.167 Charge to mass ratio of an electron moving with speed  $v$  along a circular path in a magnetic of field is given by ( $V$  voltage)

- $\frac{e}{m} = \frac{2V}{Br^2}$
- $\frac{e}{m} = \frac{V}{2B^2r^2}$
- $\frac{e}{m} = \frac{2V}{B^2r}$
- $\frac{e}{m} = \frac{2V}{B^2r^2}$

- Q.168 If a proton is projected in uniform magnetic field with 5 J kinetic energy such that it experience maximum magnetic force then its kinetic energy

- Become greater than 5 J
- Become 0 J
- Become Less than 5 J
- Remain 5 J

- Q.169 In the AC generator, magnetic field is provided by using

- Electromagnet
- either electromagnet or permanent magnet
- Permanent magnet
- No magnet used

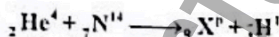
- Q.170 If the core of transformer is of substance whose hysteresis loop area is decreased, then the efficiency of transformer is

- Increased
- Decreased
- same as original
- none of these is possible

- Q.171 A coil of wire is arranged with its plane perpendicular to a uniform magnetic field of flux density  $B$ . when the radius of the coil increases from  $r_1$  to  $r_2$  in time  $\Delta t$ , then what is the emf induced in the coil?

- $\frac{\pi B(r_2^2 - r_1^2)}{\Delta t}$
- $\frac{\pi B(r_2 - r_1)^2}{\Delta t}$
- $\frac{B(r_2^2 - r_1^2)}{\Delta t}$
- $\frac{\pi B(r_2^2 + r_1^2)}{\Delta t}$

- Q.172 Step up transformer has transformation ratio of 3 : 2 what is Power across secondary if voltage in primary is 30 V and current in the secondary is 1A?  
 a. 45W  
 b. 15W  
 c. 90W  
 d. 300W
- Q.173 Rectification is possible by  
 a. Transistor  
 b. Diode  
 c. Amplifier  
 d. Capacitor
- Q.174 In a half wave rectifier, the frequency of the input is N, the frequency and form of the output will be  
 a. N/2 and Pulsating  
 b. 2N and steady  
 c. N and Pulsating  
 d. N and continuous
- Q.175 A 5 watt LED bulb converts 80% of the power into light photons of wavelength 660 nm. What is the number of photons emitted from the bulb in one second?  
 a.  $5.8 \times 10^{14}$   
 b.  $6.6 \times 10^7$   
 c.  $7.5 \times 10^{18}$   
 d.  $1.3 \times 10^{19}$
- Q.176 Photon A has twice the energy of photon B. What is the ratio of the momentum of A to that of B?  
 a. 2 : 1  
 b. 1 : 2  
 c. 1 : 1  
 d. 1 : 4
- Q.177 If electron in hydrogen atom is in energy state -3.4 eV absorb a photon of 1.9 eV and become excited then no of possible spectral lines from this excited state will be?  
 a. 1  
 b. 6  
 c. 3  
 d. 10
- Q.178 In the reaction given by



The nucleus X is

- a. Nitrogen 16  
 b. Nitrogen 15  
 c. Oxygen 17  
 d. Oxygen 16
- Q.179 Emission of radiation from radioactive substance is  
 a. Dependent on both temperature and pressure  
 b. Independent of both temperature and pressure  
 c. Independent of temperature but dependent on pressure  
 d. Independent of pressure but dependent on temperature
- Q.180 When a neutron in an unstable parent nucleus decays into a proton and an electron, the electron being emitted is  
 a.  $\alpha$ -decay  
 b.  $\gamma$ -decay  
 c.  $\beta$ -decay  
 d. None of these

## ENGLISH

### SPOT THE ERROR:

In the first type of sentences, some segments of each sentence are underlined. Your task is to identify that underlined segment of the sentence, which contains the mistake that needs to be corrected.

- Q.181 The 26 Chinese provinces subsist on their own in the event of war, while anybody  
 a. invading the country would be literally drowned in a sea of people.  
 b.  
 c.  
 d.
- Q.182 She wailed to wipe a few stray tears from her eyes and plopping her spoon down into the  
 a. carton as she watched him walk around her room.  
 b.  
 c.  
 d.
- Q.183 George claimed to find the pocketbook on the road to the village market, but not  
 a. knowing how to read he had given it to his employer.  
 b.  
 c.  
 d.
- Q.184 Julie's purse made by one of the best Italian designers, and hence it cost her three  
 a. months' salary.  
 b.  
 c.  
 d.



- Q.185 The cameras will deter potential criminals. Moreover, they will help police a great deal when a crime actually commits.  
a. b. c. d.
- Q.186 By insinuating him into the French nobility, he systematically destroyed the men who manipulated and enslaved him.  
a. b. c. d.
- Q.187 Instead, as they ate, she told about her job in a hotel beauty shop that stayed open late.  
a. b. c. d.
- Q.188 Moreover, this brew appears to kill insects faster than either of its ingredients do alone.  
a. b. c. d.

# **CORRECTION:**

In each of the following questions, four alternative sentences are given. Choose the CORRECT one and fill the Circle corresponding to that letter in the MCQ Response Form.

- Q.189  
a. That book of yours" I said, "I suppose, now, it contains all the good actions."  
b. "That book of your's," I said, "I suppose, now, it contains all the good actions."  
c. "That book of your's, I said, I suppose, now, it contains all the good actions."  
d. "That book of yours," I said, "I suppose, now, it contains all the good actions."
- Q.190  
a. Then at his own request, Mr. Hubert was searched. Nothing was found on him.  
b. Then at his own request, Mr. Hubert was searched for. Nothing was found with him.  
c. Then on his own request, Mr. Hubert was searched. Nothing was found by him.  
d. Then by his own request, Mr. Hubert was searched. Nothing was found on him.
- Q.191  
a. A bird in the hand is worth two in the bush.  
b. A bird in hand is worth two in the bush.  
c. A bird in hand is worth than two in the bush.  
d. A bird in the hand is worth than two in the bush.
- Q.192  
a. All the celebrities one never heard had turned up to a man.  
b. All the celebrities one had never heard turned up to a man.  
c. All the celebrities one had never heard of turned up to a man.  
d. All the celebrities one never heard of had turned up to a man.
- Q.193  
a. The Angel said I really need not alarm.  
b. The Angel said I really not needed to be alarmed.  
c. The Angel said I really needed not to be alarmed.  
d. The Angel said I really need not be alarmed.

## **Directions:**

Choose the correct indirect speech:

- Q.194 She said to him, "Why are you sketching on the wall?"  
a. She asked him why was he sketching on the wall.  
b. She asked him why had he been sketching on the wall.  
c. She asked him that why was he sketching on the wall.  
d. She asked him why he was sketching on the wall.

## **Directions:**

Choose the correct Passive voice:

- Q.195 He has cheated the police many times.  
a. The police have been cheated by him many times.  
b. The police has been cheated by him many times.  
c. The police have cheated by him many times.  
d. The police has cheated by him many times.

**Directions:**

Choose the correct indirect speech:

**Q.196** He said to me, "Let's go home together."

- a. He asked me to go home with him.
- b. He proposed to me to go home together.
- c. He proposed to me that we should go home together.
- d. He urged me to go home with him.

**Sentence Completion:**

Fill in the blanks with appropriate word.

**Q.197** Whatever the situation was, or \_\_\_\_\_ hard it was, the two of us were always together.

- a. Therefore
- b. Nevertheless
- c. So
- d. No matter

**Q.198** Since the old man did not trust modern conveniences, he looked at the mobile phone with \_\_\_\_\_.

- a. Scorn
- b. Scare
- c. Consciousness
- d. Conscientiousness

**Synonyms**

Choose the word that is most nearly **SIMILAR** in meaning to the word in capital letters.

**Q.199 RIOT**

- a. Tumult
- b. Poise
- c. Wafi
- d. Fang

**Antonyms**

Choose the word **OPPOSITE** in meaning to **CAPITALIZED** word given above.

**Q.200 URGE**

- a. Drive
- b. Derive
- c. Hurricane
- d. Restrain



